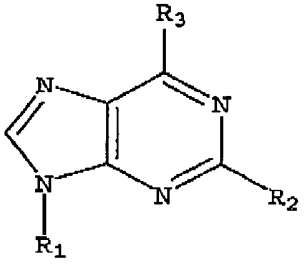
Amendments to the Claims

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (Currently Amended). A method for activating natural killer (NK) cells in a human being in need thereof, comprising administering to said individual ~~with~~ an effective amount of one or more adenosine A3 receptor agonists (A3RAg), so as to fully or partially activate adenosine A3 receptors on said NK cells and so as to achieve activation of said NK cells, wherein said human being in need is other than one in need of treatment for reproductive problems.

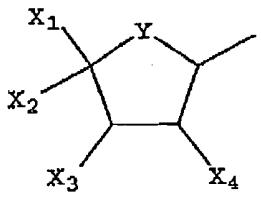
2 (Previously Presented). The method of Claim 1, wherein said A3RAg is a compound of the general formula (I):



(I)

wherein,

R_1 represents an alkyl, hydroxyalkyl, carboxyalkyl or cyanoalkyl or a group of the following general formula (II):



(II)

in which:

- **Y** represents an oxygen or sulfur atom or CH_2;

- X_1 represents H, alkyl, $R^aR^bNC(=O)$- or HOR^c-,

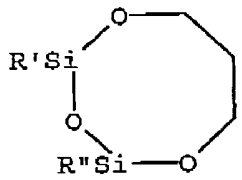
wherein

- R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms; and

- R^c is selected from the group consisting of alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl;

- X_2 is H, hydroxyl, alkylamino, alkylamido or hydroxyalkyl;

- X_3 and X_4 represent independently hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both X_3 and X_4 are oxygens connected to >C=S to form a 5-membered ring, or X_2 and X_3 form the ring of formula (III):



(III)

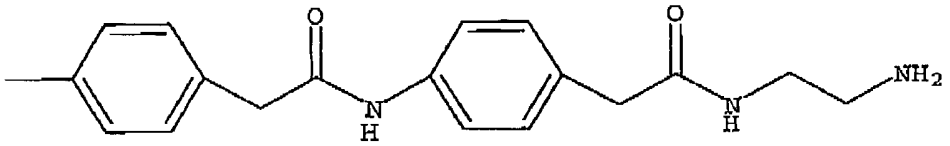
where R' and R'' represent independently an alkyl group;

- R_2 is selected from the group consisting of hydrogen, halo, alkylether, amino, hydrazido, alkylamino, alkoxy, thioalkoxy, pyridylthio, alkenyl; alkynyl, thio, and alkylthio; and

- R_3 is a group of the formula $-NR_4R_5$ wherein

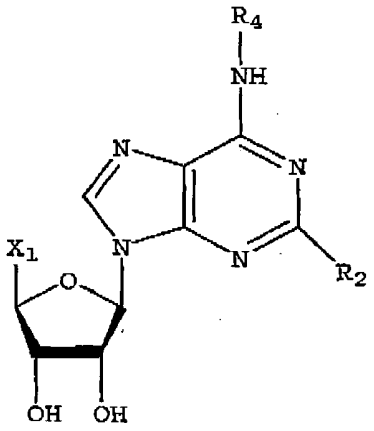
- R_4 is a hydrogen atom or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings; wherein when R_4 is hydrogen than

- R_5 is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of alkyl, amino, halo, haloalkyl, nitro, hydroxyl, acetoamido, alkoxy, and sulfonic acid or a salt thereof; benzodioxanemethyl, fururyl, L-propylalanyl-aminobenzyl, β-alanylamino-benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or cycloalkyl; or R_5 is a group of the following formula:



or when R_4 is an alkyl or aryl-NH-C(Z)-, then, R_5 is selected from the group consisting of heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-; Z representing an oxygen, sulfur or amine;
or a pharmaceutically acceptable salt of the above compound.

3 (Original). The method of Claim 2, wherein said A3RAg is a nucleoside derivative of the general formula (IV):



(IV)

wherein X_1, R_2 and R_4 are as defined in Claim 2.

4 (Previously Presented). The method of Claim 3, wherein A3RAg is selected from the group consisting of N^6-2-(4-aminophenyl)ethyladenosine (APNEA), N^6-(4-amino-3- iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and N^6- (2-iodobenzyl)-adenosine-5'-N-methyl-uronamide (IB-MECA) and 2-chloro-N^6-(2-iodobenzyl)-adenosine-5'-N-methyluronamide (Cl-IB-MECA).

5 (Original). The method of Claim 4, wherein A3RAg is IB-MECA or Cl-IB-MECA.

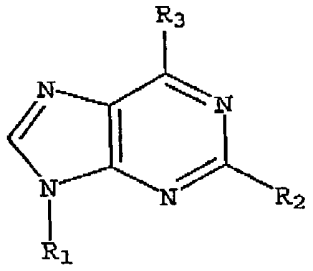
6 (Original). The method of Claim 1, wherein said A3RAg is N^6-benzyladenosine-5'-N- alkyluronamide-N^1-oxide or N^6-benzyladenosine-5'-N-dialkyluronamide-N^1-oxide, both optionally substituted at the 2-purine position with an alkoxy, amino, alkenyl, alkynyl or halogenoxide group.

7 (Original). The method of Claim 1 wherein said A3RAg is administered orally to said individual.

8 (Original). The method of Claim 1, wherein said A3RAg is injected to said individual.

9 (Currently Amended). A method for treating~~the therapeutic treatment of~~ a disease or disorder in a human individual that may be ameliorated through activation of natural killer ~~which is sensitive to activated~~ (NK) cells, comprising administering to the individual ~~a human being~~ in need, an active ingredient in an amount effective to activate NK cells in the individual, the active ingredient being one or more adenosine A3 receptor agonists (A3RAg) so as to fully or partially activate adenosine A3 receptors on said~~in an amount effective for achieving a therapeutic effect, the therapeutic effect comprising activation of~~ NK cells, thereby activating said NK cells in said individual, wherein said ~~therapeutic treatment relates to treatment of tumor cells, malignant and infectious diseases, immunoregulation, hematopoiesis, reproduction and neuroendocrine interactions~~disease or disorder is other than one related to reproduction.

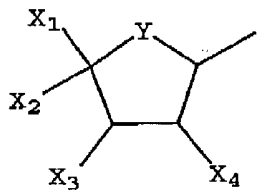
10 (Previously Presented). The method of Claim 9, wherein said A3RAg is a compound of the general formula (I):



(I)

wherein,

- R_1 represents an alkyl, hydroxyalkyl, carboxyalkyl or cyanoalkyl or a group of the following general formula (II):



(II)

in which:

- Y represents an oxygen or sulfur atom or CH_2;
- X_1 represents H, alkyl, $R^aR^bNC(=O)$- or HOR^c-,

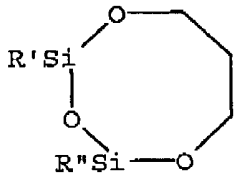
wherein

- R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms; and

- R^c is selected from the group consisting of alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl;

- X_2 is H, hydroxyl, alkylamino, alkylamido or hydroxyalkyl;

- X_3 and X_4 represent independently hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both X_3 and X_4 are oxygens connected to >C=S to form a 5-membered ring, or X_2 and X_3 form the ring of formula (III):



(III)

where R' and R'' represent independently an alkyl group;

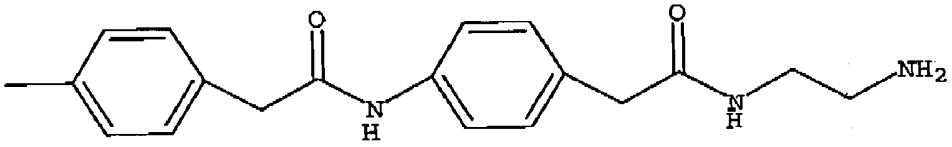
- R_2 is selected from the group consisting of hydrogen, halo, alkylether, amino, hydrazido, alkylamino, alkoxy, thioalkoxy, pyridylthio, alkenyl; alkynyl, thio, and alkylthio; and

- R_3 is a group of the formula $-NR_4R_5$ wherein

- R_4 is a hydrogen atom or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings; wherein when R_4 is hydrogen than

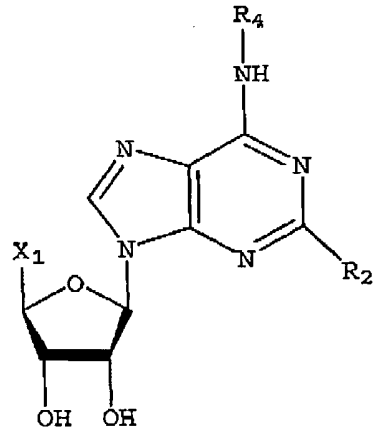
- R_5 is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups

unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of alkyl, amino, halo, haloalkyl, nitro, hydroxyl, acetoamido, alkoxy, and sulfonic acid or a salt thereof; benzodioxanemethyl, fururyl, L-propylalanyl-aminobenzyl, β-alanylamino-benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or cycloalkyl; or R_5 is a group of the following formula:



or when R_4 is an alkyl or aryl-NH-C(Z)-, then, R_5 is selected from the group consisting of heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-; Z representing an oxygen, sulfur or amine;
or a pharmaceutically acceptable salt of the above compound.

11 (Original). The method of Claim 10, wherein said A3RAg is a nucleoside derivative of the general formula (IV):



(IV)

wherein X_1, R_2 and R_4 are as defined.

12 (Previously Presented). The method of Claim 11, wherein said A3RAg is selected from the group consisting group consisting of N^6-2-(4-aminophenyl)ethyladenosine (APNEA), N^6-(4-amino-3- iodobenzyl)adenosine-5'-(N-methyluronamide) (AB-MECA) and N^6-(3-iodobenzyl)-adenosine-5'-N-methyluronamide (IB-MECA) and 2-chloro-N^6-(3-iodobenzyl)-adenosine-5'-N-methyluronamide (Cl-IB-MECA).

13 (Original). The method of Claim 12, wherein said A3RAg is Cl-IB-MECA.

14 (Original). The method of Claim 9, wherein said A3RAg is N^6-benzyladenosine-5'-N-alkyluronamide-N^1-oxide or N^6-benzyladenosine-5'-N-dialkyluronamide-N^1-oxide, both optionally substituted at the 2-purine position with an alkoxy, amino, alkenyl, alkynyl or halogenoxide group.

15 (Original). The method of Claim 9, wherein said A3RAg is orally administered to said individual.

16 (Original). The method of Claim 9, wherein said A3RAg is injected to said individual.

17-35 (Cancelled)

36 (Previously Presented). A method in accordance with Claim 9, wherein said disease is associated with malignant cells.

37 (Previously Presented). A method in accordance with Claim 9, wherein said disease is associated with cells infected with viruses, bacteria or protozoa.

38 (New). A method in accordance with Claim 9, wherein said treatment of a disease or disorder relates to treatment of tumor cells, malignant and infectious diseases, immunoregulation, hematopoiesis, or neuroendocrine interactions.